User's Manual

IQKey the Intelligent Key Storage Cabinet

SCANDINAVIAN SAFE

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General Description

IQKey is an intelligent device which can store and manage keys safely. Taking out keys is fast and simple. Identification of the user can be done by an internal or an external reader using a unique code. After verifying the user's identification the magnetic latch is released and the keys assigned to that user become available if restrictions are not in effect for those keys at that time. Each user can be granted different rights to access keys in the cabinet. These rights define not only the keys that can be taken out by the user but also the date and time frame when it is allowed.

There are three ways to impose restrictions on these entitlements in time:

No period restrictions. The given key can be taken out by the user at any time.

Weekly repeated duty list. The given key can be taken out by the user only on days of the week and in time frames that are defined in the user's entitlement. The actual time restrictions take effect in each week of the year.

Daily changed duty list. The given key can be taken out by the user only on the day and in the time frame defined in the user's entitlement. This right is granted only once, after loosing its effect it is deleted automatically from the memory of the device.

Each user has a name, a phone number and one or more other entries (e.g. card code) that identify him and describe his entitlements to access keys and menu options. The following menu accessibility rights can be granted for the user:

Key user – Menu options are not available, only keys can be taken out after the personal identification.

Event reader - Besides taking out keys the user can track the events stored in memory.

Database manager – Besides the rights of the above mentioned event reader the user can edit the data of employees, keys, key groups, time frames and user entitlements. The database can only be managed if the cabinet works without a computer.

Programmer - Besides the rights of the database manager the 'Properties' menu item can also be accessed.

The key storage cabinet remembers each event that can come up during its operation. These events are the following:

Power Supply Event: the device was plugged in to the main supply, there was a power-cut, the battery went dead or the device was switched on/off.

Door Event: the door was opened legally or illegally, the door was closed, the door was not opened when the latch got loose or the door was not closed.

Key Event: a key was taken out legally or illegally, a key was put in or an unregistered key was put in.

In case of illegal door and key events the cabinet sounds the alarm. For example if somebody breaks the door open and takes out a key by force the alarm goes off, but the same can happen if the door remains open or if it is not opened after the latch goes loose.

The key storage cabinet can operate in two modes:

As a standalone device without a computer. The entries of the database can be managed in the cabinet.

With a computer using a software to control and manage the device. The database is managed by the software via the serial port or via an internet connection.

General features of the key storage cabinet

Date and time is displayed by default.

One cabinet can store maximum 50 keys

The main cabinet can be extended with 15 other cabinets, so 800 keys can be stored

Mechanical, releasable key fastener.

Low battery voltage detection.

In case of a power-cut operation of the cabinet can be kept up for:

24 hours in quiescence (key fasteners are not released).

2 hours in case of taking out keys continually.

Electromagnetic door-lock.

Door state detection.

3000 employees can be registered with 3000 identification numbers. More than one identifier can be assigned to an employee.

50000 entitlements can be defined for employees to access the keys.

16000 events can be stored.

100 key groups can be defined.

20 periods can be used to define time frames.

Physical parameters:

Geometrical dimensions:

width: 765mm

height: 662mm

depth: 135mm

Weight: 27 kg

Electrical parameters:

Mains input voltage: 210V(AC)-230V(AC)

Max. current consumption: 0,2A(AC)

Battery voltage at the end of charging: 13,5V

Battery voltage at the end of discharging: 10,5V

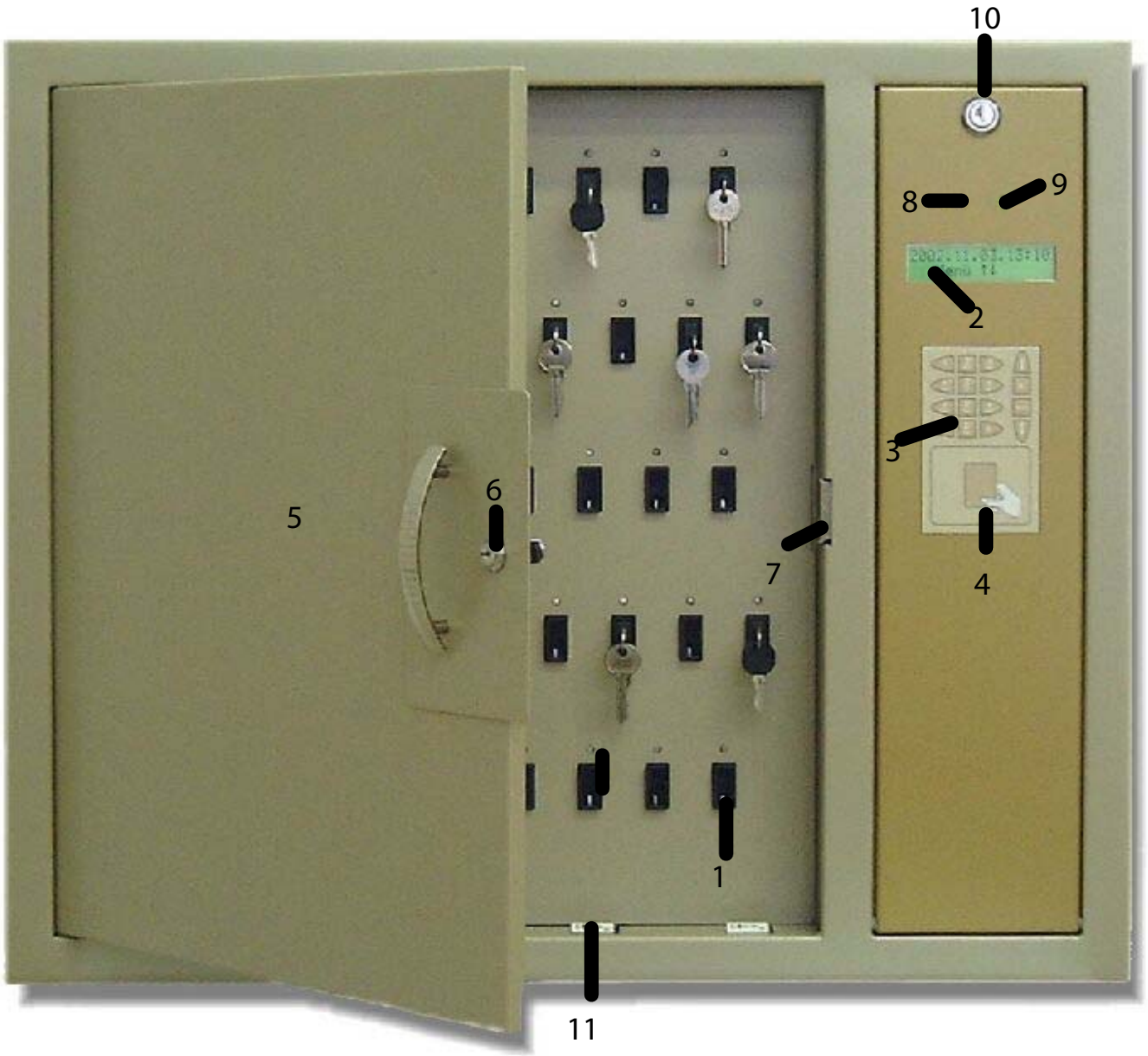
Quiescent input current: 0,4A @ 13V

Max. input current: 1,5A @ 13V

1. Installation

Before fixing the cabinet in its final position plug it into the mains by its power cable. After mounting the device toggle the power switch under the maintenance door. First the name of the product becomes visible on the display and soon after that the main menu. All of the options in the menu are accessible until a user with 'Programmer' rights is registered in the system. From that time on only the programmer can access all of the menu items.

2. User Interface



1 Key fastener.

2 2*16 characters, 2-line alphanumeric display

3 4*4 button keypad

4 Card reader interface. Tiris or EM4102 reader. Optionally the cabinet can have an external reader.

5 Door

6 Mechanical door-lock

7 Electromagnetic door-lock

8 LED indicating the state of the battery.

9 Green LED indicating the state of the door.
When the LED lights continuously the door is closed and locked.
When the LED blinks shortly, the electromagnetic lock is released, but the door is not opened yet.
When the LED blinks continuously the door is opened.

10 Maintenance lock

11 Sensor checking the open state of the door.

Functions of the buttons:

Numeric buttons: Used to enter numbers and letters. The letters displayed at the bottom of the buttons can be entered by pushing the button several times in a second until the appropriate letter appears.

Button labeled with *: Used to enter other, non-alphanumeric characters.

Enter: Used to accept and store data, to choose items from the menu, to give positive answer to yes-no questions.

Button labeled with C: Used to step back in the menu system, to cancel an operation, to give negative answer to yes-no questions.

Button labeled with : Used to toggle between lowercase and uppercase letters when entering text. If the user wants to return a key then this button can be used to open the first cabinet that has a free key fastener.

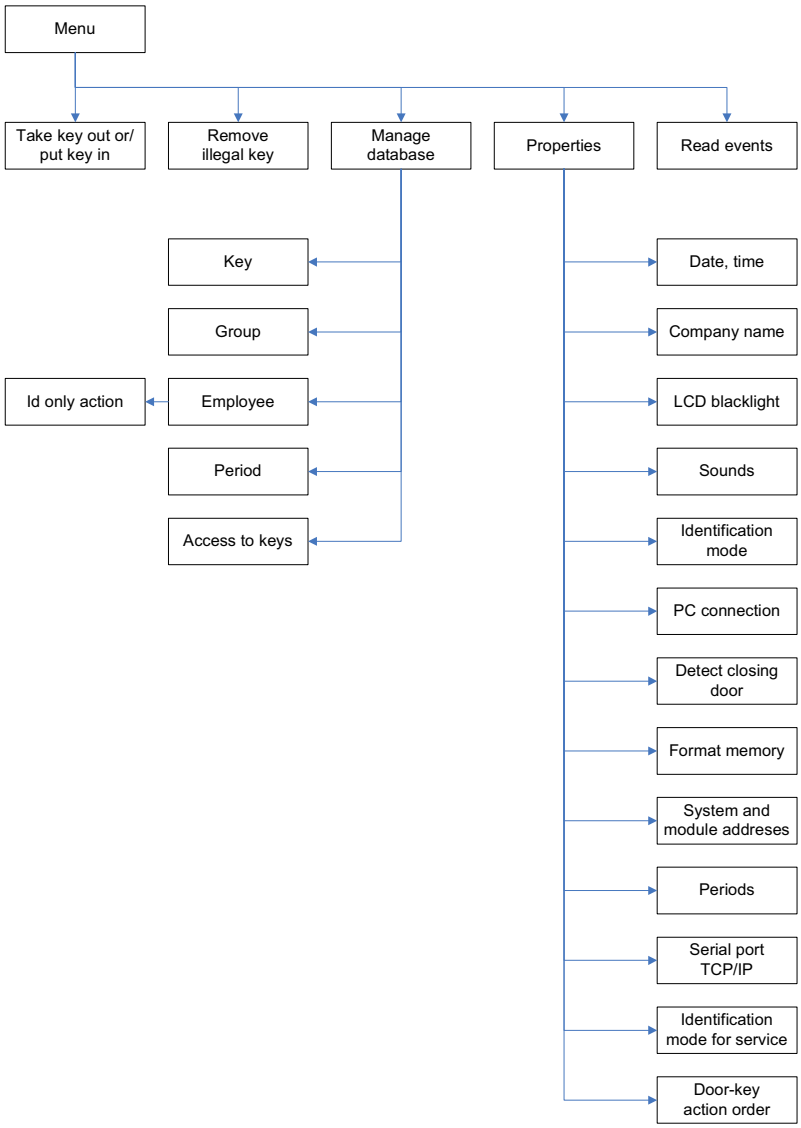
Buttons labeled with ↑ and ↓: Used to navigate in the menu.

There is a red tumbler switch behind the maintenance door that can turn off the main supply. The red pushbutton on the panel of the power supply can be used to turn off the whole device. The connectors of the serial communication and the LAN are located on the control panel.

3. Taking out and putting in keys, menu usage

By default the first line of the alphanumeric LCD display shows the current date and time, while the second line shows the name of the company. After the personal identification key users can only access the ’take key out or/ and put key in’ option. Other users can access the menu they are entitled to use.

The following picture shows the structure of the menu. Access to the database is disabled if the PC connection is enabled; we can fill up the key records stored by the supervisory application with key codes or we can change the key holders instead.



By default the display shows the current date and time and optionally the name of the company.

3.1. Take key out or/and put key in

In the 'Take key out or/and put key in' option usage of the keys can be controlled. If there is a key restriction set for the identifier (card) of an employee, then this employee can only take out the keys he is entitled to access according to the rights granted for him and only at the date and time defined in those rights. If there are no key restrictions then the employee can access all of the keys in the cabinet. Menu access rights should also be defined for each identifier or card. If the menu access rights allow not only taking out and putting in keys then the „Take key out or/and put key in" option is one of the items of the main menu, otherwise browsing in the menu is prohibited.
The 'Door-key action order' in the 'Properties' submenu determines the order of choosing a key and opening the door. If there are one or more additional cabinets in the system it is advisable to set this order to choosing a key first then opening the door, so the key can be selected before the door-latch is released. If the number of the selected key is not changed for more than a second, then the latch of the cabinet containing that key releases. If the order is door opening then choosing a key, then the door-latch is released first and the key can be selected after opening the door.
If the 'Open 01 cabinet door' message is displayed the user has 15 seconds to open the door. A failure to open the door generates an alarm event that is stored in the memory of the system and passed on to the supervisory application. When the door-latch is released the green LED starts to blink shortly on the cabinet. When the door is open the same LED blinks continuously.
When the user selects a key the name of the key and the number of the cabinet where it is located appear on the display. If the selection is not changed for more than a second, then the fastener of the key is released. This is indicated by a red light above the key fastener and the key can be taken out in the next 5 seconds after that the fastener becomes locked again.
When the user takes out the key then the fastener of the next available key is released. If that key is not taken out (the 5 seconds have passed) then the next available key can be accessed by selecting with the up and down arrows from the list and pressing 'Enter'.
If the desired key is not located in any of the cabinets no door-lock is released.
If the desired key is not in the cabinet(s) then the 'Key taked out' message appears. When pressing 'Enter', the user can learn the name and phone number of the person who got the key.
A key can be returned at any time. When putting in the key the display shows its name and the location it was placed in the cabinet.

The 'Take key out or/and put key in' operation can be finished in two ways. After closing the open doors the display shows the default text again and the device can be left as it is, or by pressing the 'C'

button the user can step up one level in the menu. Doors should not be left open in this latter case either.
If the user presses the '*' button during the ' Take key out or/and put key in' operation then he can change his own PIN code after finishing the action.

3.2. Remove illegal key

If there is an unregistered key in one of the cabinets it can be removed in this menu point. The display shows the first position where an unregistered key is located. When the user presses 'Enter', the key fastener is released, and the key can be taken out. If there are no other unregistered keys in the cabinet the door should be closed.

3.3.Properties

3.3.1. Date, time

In this menu point the date and time of the cabinet can be set. Date values can only be incremented. This can be done with the up arrow. The field of the data where the value can be changed blinks. When the user presses 'Enter' the value of the next field becomes editable. To return to the previous field press 'C'. After setting the minutes press 'Enter', so the day of the week becomes editable.

3.3.2. Company name

By default this text appears in the second line of the display.

3.3.3. LCD backlight

In this menu point the backlight of the LCD display can be switched on or off. If the backlight is on, the background of the display glimmers during key operations or when entering a menu point.

3.3.4. Sounds

We can choose from the following options here:

Silent mode - Sounds are never used in this case.

Keyboard click - A short blip is heard when pressing a button on the keypad.

Alarm sound - A long alarm signal with a long pause can be heard in case of an alarm event.

Alarm sound and keyboard click - Alarm events and button presses both generate sounds.

3.3.5. Identification mode

Entering the menu can happen in the following ways:

Card identification. The reader can be an internal H4102 or TIRIS reader, or it can be an external reader.

Card and PIN identification. Besides the electronic identifier a 4-character long PIN code is also necessary.

Card or manual identification. Identification can happen based on an electronic card or an 4-8-character long identification number

3.3.6. PC connection

If this option is set the database can only be managed through the supervisory application. In this case there is an additional menu point where the key codes can be entered or modified.
Warning: If the 'PC connection' is set on, there is no way to change it back.

3.3.7. Detect closing door

If this option is turned off the cabinet operates as if it had no door.

3.3.8. Format memory

This function should be selected right after installation. It fills up the whole memory with zero values.

3.3.9. System and module addresses

System address. When using multiple cabinets these should have different system addresses.

Module address. The address of the power supply module and the key modules can be set inside a system.

Cabinet address. When the addresses of the modules inside a cabinet are appropriate and we want to use it as an additional cabinet in a system we can use this option to change the number of the cabinet in all of its modules in one go. A system restart is necessary in this case.

3.3.10. Periods

Key access rights can be defined without time restrictions, or these can be limited to a certain day or days of the week; in this case we speak about a weekly repeated duty; or these can be granted only on one date; that is called daily changed duty.

No period restrictions. The employee identifier is assigned to a key without time limitations.

Weekly repeated duty list. The employee identifier is assigned to one day of the week when the key can be taken out.

Daily changed duty list. The employee identifier is assigned to one date when the key can be taken out.

3.3.11. Serial port, TCP/IP

If the system is controlled by a supervisory application the speed of the serial port (19 200 b/s) should be set, and if the device is connected to the intranet then the TCP/IP parameters (IP address, port number, etc.) should also be set.

3.3.12. Identification mode for service

The display shows the number of the card. Only used for maintenance purposes.

3.3.13. Door-key action order

The order of choosing a key and opening the door can be set here.

3.4. Read events

In the 'Read events' menu the user can browse through the events in chronological order. The up and down arrows can be used to step from one event to another. If these navigation buttons are hold down for a longer time scrolling speeds up. We can get detailed information on the selected event by pressing 'Enter'.

Power supply event

Detailed information: switching the device on/off, power-cut.

Door opened event

Detailed information: The name of the employee who opened the door legally. If the name of the person is unknown then the first line reads 'unknown employee'.

Door closed event

Detailed information: The name of the employee who closed the door. If the name of the person is unknown then the first line reads 'unknown employee'.

Door left open event

In this case the door was either opened illegally or it was not shut properly or it was not opened after the door-lock was released and it remained open.

Detailed information: The name of the employee who left the door open. If the name of the person is unknown then the first line reads 'unknown employee'.

Key event

Detailed information: The name of the employee who took out or put in a key and the action that was taken.

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